REMARKS

Claims 42-54 are pending in the application. Claims 42-54 stand rejected. Independent Claims 42 and 48 are being amended. Dependent Claim 49 is also being amended. Claims 55-61 are being added. Support for the new claims can be found in the Application as originally filed at least on page 13, line 17 through page 14, line 11 and in Fig. 3. No new matter is believed to be introduced by way of the amendments and the new claims.

Rejections under 35 U.S.C. §103(a)

Claims 42, 46, 48, 51, 53, and 54 were rejected under 35 U.S.C. §103(a) as being unpatentable over Ozaki (U.S. Patent No. 5,502,749, hereinafter referenced as "Ozaki"), in view of Scarpa (U.S. Patent No. 5,636,250, hereinafter referenced as "Scarpa") and Kennedy (U.S. Patent No. 5,192,957, hereinafter referenced as "Kennedy").

Claim 42 is now amended to recite "adjusting a frequency offset between the pilot tone and a clock signal to be within a predetermined frequency range as a function of a parameter value difference between the pilot tone sub-symbol and a consecutive pilot tone sub-symbol." Support for this amendment can be found in the application, as originally filed, at least on page 13, paragraph bridging page 13 and 14 and in Fig. 3.

In contrast to Applicants' Claim 42, Ozaki describes a two stage phase correcting method that employs a radio receiver device containing first and second phase shift information detection units. The first detection unit detects first phase shift information of received data. The second detection unit shifts the phase of the received data to detect a second phase shift. Ozaki's system corrects the phase shift of the received data by comparing the output signals from the first and second phase shift detection units. The received data includes a transmission signal, but the transmission signal is not a pilot tone.

Scarpa is being combined with Ozaki because Ozaki does not disclose "searching for a pilot tone by scanning a frequency range in predetermined frequency steps," as recited in Applicants' pending Claim 42. However, Scarpa merely describes the use of a sliding pass-band filter, whose center frequency is moved across a pre-selected frequency region, where Scarpa anticipates finding a pilot tone will be found, to determine the presence or absence of a pilot

tone. Scarpa does not "adjust[ing] a frequency offset between the pilot tone and a clock signal to be within a predetermined frequency range as a function of a parameter value difference between the pilot tone sub-symbol and a consecutive pilot tone sub-symbol," as required by Applicants' amended Claim 42.

Kennedy describes a shared channel Global Positioning System (GPS) receiver for receiving satellite signals that employs a fixed-frequency phase locked loop. Specifically, referring to Kennedy's Fig. 2, Kennedy derives its local oscillator (LO) injection frequencies from an L-band voltage controlled oscillator 70 and divides the frequency output 42 of the L-band oscillator using a pre-scalar 50. The pre-scalar 50 is a high-speed frequency divider that provides a second mixer local frequency signal 49. This signal 49 is buffered and level shifted using a translator to establish logic levels on a TTL output lead 53. The signal 49 is also used to drive the second digital divider 54 that provides a signal 56 that is one half the frequency of the signal 49. During normal operations, the phase and frequency of signal 56 will be equal to that of a stable oscillator 55. The outputs 56, 57 of digital divider 54 and the stable oscillator 55 are connected to a phase-frequency detector 58. The output of the phase-frequency detector 58 in combination with loop filter 59 provides a frequency and phase correcting voltage to lock its phase and frequency to that of stable oscillator 55 (see column 4, line 46- column 5, line 17 of Kennedy). Thus, the phase locked loop 69 of Kennedy "is fixed frequency and is required to generate only a first LO frequency 42, a second LO frequency 49, and a frequency 56 equal to the stable oscillator frequency 57." (See Kennedy, column 5, lines 13-17.)

Therefore, Kennedy operates in a tracking mode that maintains a desired phase and frequency given that the reference signal (e.g., pilot tone) and the target signal are already within a predetermined frequency range. Kennedy does not "adjust[ing] a frequency offset between the pilot tone and a clock signal to be within a predetermined frequency range as a function of a parameter value difference between the pilot tone sub-symbol and a consecutive pilot tone sub-symbol," as required by Applicant's amended Claim 42.

A hypothetical system combining the teachings of Ozaki, Scarpa, and Kennedy may be able to scan a frequency range in predetermined frequency steps and lock on a phase and frequency to a fixed frequency of a stable oscillator, but it would not "adjust[ing] a frequency offset between the pilot tone and a clock signal to be within a predetermined frequency range as

a function of a parameter value difference between the pilot tone sub-symbol and a consecutive pilot tone sub-symbol." Specifically, given that Kennedy has a pilot tone generating signal on board with his target signal generator and since the frequencies of the pilot tones are designed to be fixed, Kennedy's pilot tones can never operate at any frequency other than the target frequency required for phase loop operation. Thus, the hypothetical system combining the teachings Ozaki, Scarpa, and Kennedy would include a phase locked loop with fixed frequency with pilot tones that could only operate at a specific frequency. Such a system would only be able to operate under the assumption that the reference and the target signals are always within an acceptable frequency range for correct phase locked loop operation.

Moreover, one of ordinary skill in the art would not be motivated to modify the hypothetical system, as recited in Applicants' amended Claim 42, to "adjust[ing] a frequency offset between the pilot tone and a clock signal to be within a predetermined frequency range as a function of a parameter value difference between the pilot tone sub-symbol and a consecutive pilot tone sub-symbol," because such modification is essentially equivalent to modifying a system, which operates under the assumption that the reference and the target signals are always within an acceptable frequency range for correct phase locked loop operation, to operate as a system that adjusts a frequency offset between the pilot tone and a clock signal to a predetermined frequency range based on a parameter value difference between the pilot tone sub-symbol and a consecutive pilot tone sub-symbol. Such modification is clearly not trivial.

Therefore, it is Applicants' position that amended Claim 42 is allowable over Ozaki in view of Scarpa in further view of Kennedy. Accordingly, Applicants respectfully request that the rejection of this claim under 35 U.S.C. § 103(a) be withdrawn.

Independent Claim 48 is being amended to include similar elements as amended Claim 42. Accordingly, Applicants respectfully request that the rejection of this claim under 35 U.S.C. §103(a) be withdrawn for the reasons presented above.

Since Claims 46, 51, 53, and 54 depend from independent Claims 42 and 48, Applicants respectfully request that these dependent claims be allowed for at least the same reasons as the base claims from which they depend.

Claims 43, 44 and 50 were rejected under 35 U.S.C. §103(a) as being unpatentable over Ozaki, in view of Scarpa, and Kennedy as applied to Claim 42, and further in view of Nakano *et al.* (U.S. Patent No. 5,559,789), hereinafter referenced as "Nakano."

Nakano is being combined with Scarpa, Kennedy, and Ozaki because none of these references discloses identifying and/or recovering pilot tone sub-symbols, as required by Applicants' claims 43, 44, and 50. However, Nakano merely introduces a pilot generating circuit for generating a pilot signal that has a constant transmission power level. Nakano does not disclose or teach "adjusting a frequency offset between the pilot tone and a clock signal to be within a predetermined frequency range as a function of a parameter value difference between the pilot tone sub-symbol and a consecutive pilot tone sub-symbol," as required by Applicants' amended Claim 42 and similarly in Claim 48.

Moreover, the hypothetical system combining the teachings of Ozaki, Scarpa, Kennedy, and Nakano system, even if presented with a pilot tone by Nakano, would make no use of the pilot tone.

Since claims 43, 44, and 50 depend from base Claims 42 or 48, it is Applicants' position that these claims are allowable over Ozaki in view of Scarpa, Kennedy, and further in view of Nakano. Accordingly, Applicants respectfully request that the 35 U.S.C. § 103(a) rejection of these claim be withdrawn.

Claim 45 was rejected under 35 U.S.C. §103(a) as being unpatentable over Ozaki, in view of Scarpa, Kennedy, and Nakano, as applied to Claim 44, and further in view of Ojanpera *et al.* (U.S. Patent No. 5,703,873), hereinafter referenced as "Ojanpera."

Ojanpera is being combined with Scarpa, Ozaki, Kennedy, and Nakano because these references do not teach or disclose "scanning a plurality of bins to locate a bin containing the pilot tone sub-symbol," as required by Applicants' claim 45. However, Ojanpera merely introduces a method for synchronizing subscriber equipment. Ojanpera does not disclose or teach "adjusting a clock signal frequency depending on the parameter value difference to lock on a phase and frequency of the pilot tone," as required by Applicants' Claims 42 and 48. Since claim 45 depends from base Claims 42 or 48, it is Applicants' position that Claim 44 is allowable over Ozaki in view of Scarpa, Kennedy, and Nakano and further in view of Ojanpera.

Accordingly, Applicants respectfully request that the 35 U.S.C. § 103(a) rejection of this claim be withdrawn.

Claims 47, 49 and 52 were rejected under 35 U.S.C. §103(a) as being unpatentable over Ozaki, in view of Scarpa and Kennedy, as applied to Claim 42, and further in view of Hill (U.S. Patent No. 3,795,772), hereinafter referenced as "Hill."

Hill is being combined with Scarpa, Kennedy, and Ozaki because none of these references discloses "using a clock signal frequency for phase locked loop processing," as required by Applicants' claims 47, 49, and 52. However, Hill merely introduces a synchronization system with multiple control loops that are used to optimize rate of frequency acquisition and synchronization. Hill does not disclose or teach "adjusting a frequency offset between the pilot tone and a clock signal to be within a predetermined frequency range as a function of a parameter value difference between the pilot tone sub-symbol and a consecutive pilot tone sub-symbol," as required by Applicants' Claim 42 and similarly by Claim 48. Since claims 47, 49, and 52 depend from base Claims 42 or 48, it is Applicants' position that these claims are allowable over Ozaki in view of Scarpa and Kennedy and further in view of Hill. Accordingly, Applicants respectfully request that the 35 U.S.C. § 103(a) rejection of these claim be withdrawn.

Supplemental Information Disclosure Statement

A Supplemental Information Disclosure Statement (SIDS) is being filed concurrently herewith. Entry of the SIDS is respectfully requested.

CONCLUSION

In view of the above amendments and remarks, it is believed that all claims that will be pending after entry of this Amendment, namely claims 42-61, are in condition for allowance, and it is respectfully requested that the application be passed to issue. If the Examiner feels that a telephone conference would expedite prosecution of this case, the Examiner is invited to call the undersigned.

Respectfully submitted,

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